

JASPER: Lawrence Livermore National Laboratory's Joint Actinide Shock Physics Experimental Research facility, located at NNSA's Nevada Test Site is home to the two-stage gas gun, a 30-meter-long, two-stage device to strengthen scientists' ability to ensure that the nation's nuclear stockpile is safe and reliable. See pages 4 and 5 for a comprehensive fact sheet about NNSA's Stockpile Stewardship activities.

NNSA Completes Refurbishment of B61 Bomb

The final refurbished B61 strategic nuclear bomb has entered into the U.S. nuclear weapons stockpile, completing an eight-year effort. This program extended the original intended life for both the B61 Mod 7 and Mod 11 strategic bombs, and was completed almost one year early.

"This is the culmination of an ambitious effort which helped to ensure that the nation's aging nuclear weapons stockpile continues to be reliable," said Robert Smolen, then NNSA's deputy administrator for defense programs. "Nuclear scientists, engineers, and technicians across NNSA's national security enterprise contributed to this effort."

Most nuclear weapons in the U.S. stockpile were produced 30 to 40 years ago, and no new nuclear weapons have been produced since the end of the Cold War. Used by the Air Force for its B-52H and B-2A bombers, the B61 Mod 7 and Mod 11 are modifications of the B61 Mod 1,

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NNSA Announces Decisions to Transform National Security Enterprise

The plan to transform and downsize NNSA's infrastructure moved forward when Administrator Thomas D'Agostino signed two formal decision documents to begin its implementation. This signing allows the agency to continue the process of moving from an aging, Cold War-era nuclear weapons complex into a 21st century national security enterprise.

"We can now start moving forward on much-needed consolidation and streamlining throughout our national security enterprise, shifting to more cost effective operations that will save the taxpayer money," said

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Record of Decision (continued from page 1)

D'Agostino. "This will improve the safety and security of the infrastructure that maintains U.S. nuclear weapons, helps prevent the spread of nuclear weapons and material, and responds to potential nuclear

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Thomas D'Agostino, NNSA Administrator

terrorism or other emergencies."

The records of decision signed by the administrator are the final steps in a several year-long national

environmental policy act process - one that involved unprecedented input from the public. The plan, known as "Complex Transformation," calls for a consolidation of missions and facilities within the existing NNSA sites, known as distributed centers of excellence. While not eliminating any sites, NNSA would eliminate redundancies in missions, capabilities and facilities across the complex, eventually reducing costs.

The records of decision define directions for major nuclear research, development, and testing facilities supporting NNSA's missions, including:

- ◆ Consolidate high-security special nuclear material to five NNSA sites and at fewer locations within these sites;
- ◆ Plutonium operations will be consolidated at NNSA's Los Alamos National Laboratory in New Mexico;
- ◆ Uranium operations will be consolidated at NNSA's Y-12 National Security Complex in Tennessee;
- ◆ Assembly and disassembly of nuclear weapons and high explosives production and manufacturing will remain at NNSA's Pantex Plant in Texas;
- ◆ Tritium operations will be consolidated at the Savannah River Site in South Carolina;
- ◆ Flight testing operations will continue at Tonopah Test Range in Nevada in a more reduced scope that relies on a smaller footprint for NNSA operations; and,
- ◆ Major environmental test facilities, where weapon components are exposed to different temperatures and mechanical stresses typical of different types of environments, will be consolidated at Sandia National Laboratories in New Mexico.

While outlining a path forward for the enterprise, the records of decision do not commit to a specific budget, timeline, size or capacity for any specific facility. The records of decision also maintain current operations related to weapons support functions at Sandia National Laboratories in California as well as high explosives research and development and hydrodynamic testing facilities.

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NNSA Completes Refurbishment of B61 Bomb

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which first entered the stockpile in 1969.

NNSA relies upon science-based research and development to extend the lifetime of the current weapons in the stockpile. By extending the life of a current weapon that can safely and reliably remain in the stockpile without having to be replaced or removed, NNSA is able to maintain a credible nuclear deterrent without producing new weapons or conducting new underground nuclear tests.

A ban on nuclear testing was put into place in 1992, and NNSA continues to meet the challenge of certifying nuclear weapons without testing.

NNSA and DTRA Partner on Nuclear Security Challenges

An agreement to conduct research and development on a range of shared nuclear security challenges, such as the effects of a potential detonation of a terrorist crude nuclear device, has been signed by NNSA and the Defense Threat Reduction Agency (DTRA).

"NNSA and DTRA have a history of working together to solve nuclear security challenges of a post-Cold War and post-9/11 world," said NNSA Administrator Thomas D'Agostino. "This agreement formalizes and strengthens this relationship. As we move forward on this and other similar agreements, I look forward to using NNSA's science, technology and engineering enterprise to solve the urgent nuclear security challenges of today and tomorrow."

Secretary of Energy Samuel Bodman approved a new direction for NNSA's national security laboratories and its test site in June of 2008. This change recognizes that NNSA's roles in

nuclear nonproliferation and nuclear counterterrorism are growing and, through agreements like this with other federal agencies, the laboratories can and do contribute to national security more broadly than in the past. The DTRA agreement is the first to result from the new vision and will support the missions of both agencies.

"Both organizations have significant roles in a shared national mission space," said DTRA Director Dr. James A. Tegnella. "This agreement allows us to pool resources and strengthen support for the key national laboratories that are critical to these efforts."

D'Agostino said partnerships such as this will help with national and homeland security missions that an agency working alone might not otherwise be able to accomplish.

NNSA Applauds European Union Contribution to IAEA Fuel Bank

A decision by the Council of the European Union (EU) to contribute 25 million euros towards the establishment of an International Atomic Energy Agency (IAEA) nuclear fuel bank has been lauded by NNSA and DOE officials.

The EU contribution, and similar contributions from the United States (\$50 million), the United Arab Emirates (\$10 million) and Norway (\$5 million), are to be matched by a \$50 million grant from the Nuclear Threat Initiative (NTI) for the establishment of an international fuel bank under IAEA auspices. The NTI grant is conditioned on the receipt of \$100 million in matching grants and action by the IAEA Board of Governors to establish such a fuel bank.

"We applaud the European decision to support an IAEA nuclear fuel bank," said then-NNSA Deputy Administrator William Tobey. "This reflects our common interest in promoting the use of nuclear energy in ways that reduce proliferation risk and provide nations with viable alternatives to indigenous development of enrichment technology," Tobey said.

In August, U.S. Secretary of Energy Samuel W. Bodman officially issued a letter to the IAEA Director General Mohamed El Baradei, donating nearly \$50 million for the purpose of establishing an International Nuclear Fuel Bank (INFB). This donation builds on NNSA's close cooperation with the IAEA to provide financial and in-kind contributions that aid U.S. efforts to prevent nuclear proliferation and combat nuclear terrorism.

For more information about NNSA's work with the IAEA, go to: <http://nnsa.energy.gov/news/1773.htm>.

KCSO RAISES THE VPP FLAG: One of the first official duties of the Kansas City Site Office Voluntary Protection Programs (VPP) Steering Committee was to raise their Occupational Safety and



Health Administration VPP Star flag. Left to right are Jessy Innocent, Kent Kerr, Carole Stone, Jerry Wienberg, and Catherine Karney. The Kansas City Plant celebrates a long history of safety excellence with the following three VPP Star organizations under one roof: Honeywell (DOE VPP Star since 1996), Facility Engineering Services LLC (DOE VPP Star since 2006), and KCSO (OSHA VPP Star since 2007).

NNSA Fact Sheet: The S

A safe, secure and reliable U.S. nuclear weapons stockpile continues to be NNSA's core national security responsibility. In doing so, it ensures that the U.S. nuclear deterrent meets the needs of the 21st century.

Reducing the Nuclear Weapons Stockpile

Under the Moscow Treaty of 2002 between the United States and Russia, the United States agreed to reduce the size of its operationally deployed strategic nuclear weapons to between 1,700 to 2,200 by 2012. In addition to this treaty, a 2004 Presidential decision mandated that in eight years the size of the overall U.S. nuclear weapons stockpile (both reserve and operationally deployed) be reduced nearly 50 percent from the time he entered office. That goal was met five years early, so he directed that the stockpile be reduced further by almost 15 percent more by 2012.

- The current U.S. nuclear weapons stockpile is the lowest it has been since the Eisenhower Administration
- Dismantlement of the W79 was completed in 2003
- Dismantlement of the W56 was completed in 2006
- 13 different nuclear weapon types have been retired and eliminated since 1992
- 374 metric tons (MT), or roughly 15,000 nuclear weapons-worth, of highly enriched uranium (HEU) removed from U.S. stocks, 200 MT of this amount was declared excess in 2005
- 61.5 MT, or roughly 7,600 nuclear weapons-worth, of plutonium removed from U.S. stocks. Nine MT of this amount was declared excess in 2007



Consolidating Nuclear Material

NNSA plans to consolidate nuclear materials at five sites by 2012, with significantly reduced square footage at those sites by 2017. This will further improve security and reduce security costs, and is part of NNSA's overall effort to transform the Cold War era nuclear weapons complex into a 21st century nuclear security enterprise.

- 15 MT of special nuclear material was removed from NNSA sites in fiscal year 2008
- Sandia National Laboratories has removed all special nuclear material quantities that require the highest level of security
- Lawrence Livermore National Laboratory has reduced its special nuclear material by 35 percent

State of the Stockpile

Consolidating the Nuclear Weapons Complex

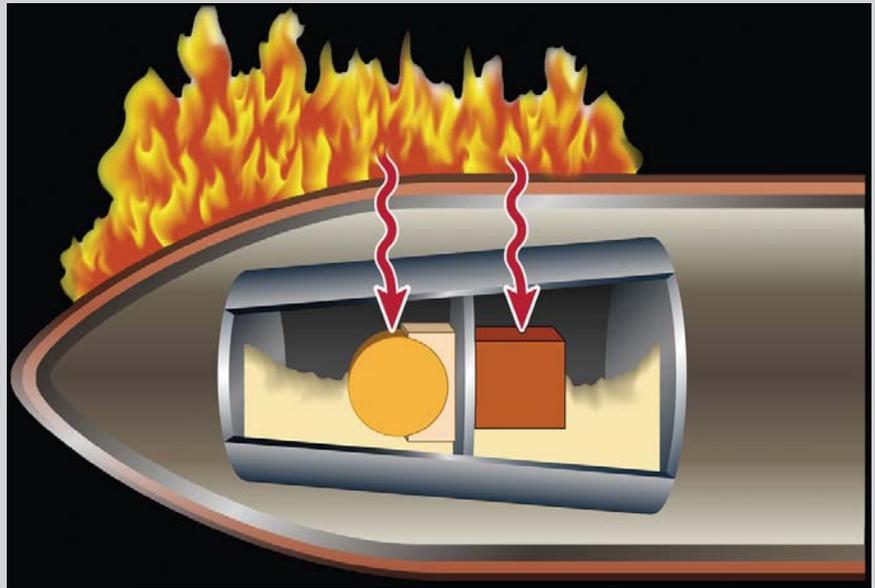
Reflecting a reduced stockpile and the need to tear down Cold War-era facilities, NNSA has a plan, known as Complex Transformation, to move from the current aging nuclear weapons complex to a 21st century national security enterprise that is smaller, safer, more secure and more cost effective.

ROADRUNNER:

the Los Alamos National Laboratory supercomputer used for advanced physics and predictive simulations. Weapons science applications are applicable to all three of NNSA's weapons laboratories.

Complex Transformation would:

- Close or transfer from weapons activities about 600 buildings or structures, many by 2010
- Reduce the footprint of NNSA operations at two major testing sites supporting its laboratories by 2015
- Reduce the square footage of buildings and structures supporting weapons missions by nine million square feet
- Employ 20 to 30 percent fewer workers directly supporting weapons missions consistent with a smaller, more efficient complex



DETERMINING WEAPON SAFETY: Computer analysis at Sandia National Laboratories of a simple stronglink/weaklink safety subsystem in a heating event.

Maintaining the Nuclear Weapons Stockpile

The United States has not deployed a new nuclear weapon in over 20 years nor conducted an underground nuclear test since 1992. Instead, NNSA scientists maintain current warheads well beyond their original life using sophisticated supercomputers and facilities that test the safety, security and reliability of U.S. weapons in NNSA laboratories versus an underground nuclear test - an important nonproliferation goal.

- The life extension program for the W87 was completed in 2004
- The first refurbished B61-7 and B61-11 nuclear bombs were delivered in 2006 - this extended the lives of these weapons by at least 20 years
- The fastest supercomputer in the world, Roadrunner, is used to perform calculations that vastly improve the ability to certify the reliability of the stockpile without conducting underground nuclear tests. NNSA's Blue Gene/L and Red Storm are some of the world's fastest supercomputers as well.
- The capability to manufacture a small number of replacement "pits," the triggers of nuclear weapons, for the W88 was reestablished in 2007 - building these replacement pits allows NNSA to continue to take apart and certify the reliability of the stockpile without conducting underground nuclear tests
- The capability to produce tritium, a short-lasting but essential component of a nuclear weapon, was reestablished in 2006

Pantex Achieves Environmental Milestone

The Pantex Plant is celebrating a significant environmental milestone with the approval of the site-wide Record of Decision (ROD) for Groundwater, Soil and Associated Media. Cooperation

NNSA vision into a viable project plan and met every milestone. The EPA provided continuity throughout the process. The TCEQ supported the project with the resources necessary to

and artillery projectiles. Since 1951, the plant has been used for nuclear weapons assembly and disassembly operations. Unfortunately, the waste practices associated with this work resulted in contamination.

The Pantex site was added to Superfund National Priorities List in 1994. Technical experts and scientists at Pantex spent many years

HISTORIC PANTEX PLANT: Conventional bomb lines during WWII.



investigating and identifying environmental impacts, submitting documents to regulators, receiving formal comments on the documents, but not making tangible progress on the cleanup.

was the key that enabled approval of the ROD eight years ahead of schedule.

NNSA's Pantex Site Office (PXSO) and the U.S. Environmental Protection Agency (EPA) jointly issued the ROD with concurrence from the Texas Commission on Environmental Quality (TCEQ).

The three agencies agreed that communication, trust and leadership by all parties allowed the program to succeed. The Department of Energy/NNSA was the sponsor of the cleanup program and had a clear vision for environmental restoration at the plant. B&W Pantex, the site's managing and operating contractor, cultivated the DOE/

achieve important milestones. Community involvement also played a role in the accomplishment.

"We wouldn't be here today if it weren't for the willingness of each agency involved to work together as a team to achieve the common goal of protecting human health, protecting the environment and continuing to protect the Ogallala aquifer," said Dennis Huddleston, B&W Pantex projects division manager.

Soil and groundwater contamination occurred during the site's early years of operation. The Pantex Plant was originally built during World War II for the United States Army to produce conventional munitions, bombs

In 2001, a core team was established with members from PXSO, EPA, TCEQ and B&W Pantex. The group's plan used the DOE's accelerated cleanup approach, but more importantly the plan established a shared vision and a timeline.

Pantex, the EPA and the TCEQ developed an interagency agreement in early 2008 that described the process by which cleanup activities will be implemented and defined the roles and responsibilities of each party. In March 2008, Pantex evaluated alternatives for meeting cleanup goals and presented those alternatives to the public. By September 2008, all three parties negotiated and issued the ROD.



NEW HALLWAY DISPLAYS: Hallways in the A and B wings of the Defense Programs offices on the fourth floor of the Forrestal Building in Washington, D.C., have been renovated to provide updated informational posters from NNSA facilities along with a photographic history of the weapons complex and portraits of federal and contractor managers at each site. Robert Smolen (left), deputy administrator for defense programs, initiated the project. Mark Baca of the Defense Programs innovator team headed an integrated team that conducted the project. Tri Tran, a Lawrence Livermore National Laboratory staff member on loan to NNSA, was in charge of implementation of the team's plan. He is pictured (center) in the photo cutting the ribbon. Everet Beckner, a former NNSA deputy administrator for defense programs, is on the right.

NNSA, FBI Conduct Counter-Terrorism Exercise

Since 1999, two years before the tragic events of 9/11, the Department of Energy, NNSA and the Federal Bureau of Investigation (FBI) have sponsored a "no-fault" counterterrorist weapons of mass destruction (WMD) tabletop exercise program called "Silent Thunder." No-fault means that the exercise is designed for learning and there are no penalties or grading. The highly successful program is supported by NNSA's Office of the Deputy Under Secretary for Counterterrorism and the FBI's WMD Countermeasures Unit.

"Silent Thunder is designed to examine how local, state and federal agencies would respond to a terrorist attack on a department facility involving WMDs," said Steve Aoki, deputy under secretary for counter-terrorism. "It also helps build teamwork and an in-depth understanding of who does what to whom in a terrorist-WMD incident."

The twenty-eighth Silent Thunder exercise was hosted by the Sandia Site Office and Sandia National Laboratories (SNL) in Albuquerque, N.M. The exercise scenario began with a group of protestors and media outside Kirtland Air Force Base.

This was followed by a series of simulated terrorist attacks that took place over a 90-minute period of time. The "attacks" included the release of animals infected with deadly pathogens, the destruction of the local utility company's Sandia Substation, an attack on the Microelectronic Component Laboratory by a stolen garbage truck filled with explosives, and an occupation and hostage-taking inside the Annular Core Research Reactor with the threat to blow up the reactor core.

Attending the exercise at SNL were 127 representatives from federal, state and local levels. To date, approximately 2,400 emergency responders have been trained through this program. The next Silent Thunder is scheduled for spring of 2009.

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Deputy Under Secretary for Counter-terrorism

Kansas City Plant Test Equipment Aids Warfighter

The U.S. Air Force enlisted the help of NNSA's Kansas City Plant (KCP) test equipment organization to enhance the manufacturability and reliability of test sets used to maintain a weapon guidance kit.

The Air Force uses a Paveway guidance kit to convert various "dumb" gravity bombs to highly reliable laser-guided "smart" bombs with all-weather capability and proven success in combat.

Extensive environmental testing was used at KCP to simulate jeep, aircraft and naval environments to identify reliability risks. Testing included temperature cycling, vibration and drop testing. Based on these tests, plant engineers recommended and implemented multiple enhancements to provide

The Paveway guidance kits are routinely tested



KCP ENHANCES MANUFACTURABILITY: NNSA's Kansas City Plant built test sets for the Paveway II/III weapons system shown here being deployed by a U.S. Air Force F-15 Eagle.

while in storage and before being used in a mission. Until recently the tests had been performed with 30-year-old technology and obsolete parts, and the test sets were becoming increasingly difficult to maintain.

a more rugged and robust design. With help from the plant, the Air Force was able to provide field units to the warfighter that are combat-ready, more ergonomic, and easier to operate and maintain than the legacy test sets. In addition, the new field units perform testing more than 80 percent faster than previous test sets, increasing efficiency and mission readiness.

Y-12 Participates in Educational Employment Program for Retiring Veterans

Several of Tennessee's top technical, engineering and educational organizations in the greater Oak Ridge - Knoxville area have teamed together to create a unique consortium to provide engineering employment and educational opportunities for military veterans.

The new program, known as the America's Veterans to Tennessee Engineers program, which is a Scientific, Technology, Engineering, and Mathematics (STEM) program, is an opportunity for retiring veterans to complete an engineering degree that will lead to full time employment at several area technical companies and institutions.

"While we are transforming physical structures and technical processes throughout the Corridor, we cannot disregard the need for the knowledge and talent to operate them," said Congressman Zach Wamp, the architect of the Tennessee Valley Corridor.

STEM matches the military service, discipline and skills of primarily noncommissioned officers to help support future regional technical needs. It is intended to help veterans transition from military status through education to employment in needed technical and scientific fields.

Darrel Kohlhorst, president and general manager of B&W Y-12, said, "We are extremely pleased to take part in this effort. This is an important way for us to give something back to those who have given so much in helping to protect our nation."